

CLAIMS

- 1 1. A removable nonvolatile memory device for use in a file server having an oper-
2 ating system kernel, comprising:
3 a plurality of partitions, each of the plurality of partitions capable of storing dif-
4 ferentiated information;
5 a first kernel image, the first kernel image stored in a first partition of the plurality
6 of partitions; and
7 a second kernel image, the second kernel image stored in a second partition of the
8 plurality of partitions.
- 1 2. The removable nonvolatile memory device of claim 1, wherein the second kernel
2 image is a last known good kernel.
- 1 3. The removable nonvolatile memory device of claim 1, wherein the file server
2 further comprises a set of boot instructions including instructions for booting from the
3 first kernel image.
- 1 4. The removable nonvolatile memory device of claim 3, wherein the set of boot in-
2 structions further comprises instructions for booting from the second kernel image if an
3 error event occurs during booting from the first kernel image.
- 1 5. The removable nonvolatile memory device of claim 1, further comprising a set of
2 diagnostic software, the diagnostic software stored in a third partition of the plurality of
3 partitions.
- 1 6. The removable nonvolatile memory device of claim 5, further comprising a diag-
2 nostic log, the diagnostic log stored in a fourth partition of the plurality of partitions.
- 1 7. A file server system for a computer having a processor, a memory coupled to the
2 processor, and a system bus to which the memory and processor are coupled, the com-

3 puter having an operating system kernel and being configured to implement a file system,
4 the file server system comprising:

5 a removable nonvolatile memory device coupled to the system bus, the removable
6 nonvolatile memory device having a plurality of partitions, wherein a first partition of the
7 plurality of partitions containing a kernel image; and

8 a set of boot instructions resident in the file server system including instructions
9 for booting from a first set partition of the removable nonvolatile memory device and in-
10 structions for booting from an alternate set partition of the removable nonvolatile mem-
11 ory device if an error event occurs during booting from the first set partition.

1 8. The file server system of claim 6 wherein the removable nonvolatile memory de-
2 vice is a compact flash.

1 9. The file server system of claim 6 wherein the removable nonvolatile memory de-
2 vice further comprises a second partition of the plurality of partitions, the second partition
3 containing a last known good kernel image.

1 10. The file server system of claim 6, wherein the set of boot instructions are con-
2 tained in firmware within the file server system.

1 11. The filer server system of claim 6 further comprising a third partition of the plu-
2 rality of partitions, the third partition containing diagnostic software.

1 12. The filer server system of claim 10 further comprising a fourth partition of the
2 plurality of partitions, the fourth partition containing a diagnostic log.

1 13. A method for installing a new kernel image to a removable nonvolatile memory
2 device having a plurality of partitions in a file server system comprising the steps of:
3 storing the new kernel image on a storage device;
4 copying a current boot kernel from a current boot kernel location to a last known
5 good kernel location; and

6 copying the new kernel image to the current boot kernel location.

1 14. The method of claim 11, wherein the current boot kernel location is a first parti-
2 tion of the removable nonvolatile memory device.

1 15. The method of claim 11, wherein the last known good kernel location is a second
2 partition of the removable nonvolatile memory device.

1 16. The method of claim 11, wherein the storage device further comprises one or
2 more storage disks operatively interconnected to the file server system.

1 17. A computer-readable medium operating on a computer in a network that includes
2 a removable nonvolatile memory device having a plurality of partitions, the computer-
3 readable medium including program instructions for performing the steps of:

4 storing a new kernel image on a storage device;
5 copying a current boot kernel from a current boot kernel location to a last known
6 good kernel location; and
7 copying the new kernel image to the current boot kernel location.

1 18. A method for installing an upgrade kernel in a computer system having a remov-
2 able nonvolatile memory device, the removable nonvolatile memory device having at
3 least a first partition and a second partition, the computer system currently executing a
4 copy of an old kernel stored in the first partition of the removable nonvolatile memory
5 device, the method comprising the steps of:

6 copying the old kernel from the first partition to the second partition;
7 adjusting a set of boot variables so that the computer will boot from the second
8 partition;
9 copying a stored copy of the upgrade kernel to the first partition; and
10 adjusting the set of boot variables so that the computer will boot from the first
11 partition.

1 19. The method of claim 16 further comprising the step of:
2 verifying the copy of the old kernel written to the second partition before adjust-
3 ing the set of boot variables so that the computer will boot from the second partition.

1 20. The method of claim 17 further comprising the step of :
2 verifying the copy of the upgrade kernel to the first partition before adjusting the
3 set of boot variables so that the computer will boot from the first partition.

1 21. A method for installing an upgrade kernel in a computer system having a remov-
2 able nonvolatile memory device, the removable nonvolatile memory device having at
3 least a first partition and a second partition, the computer system currently executing a
4 copy of an old kernel stored in the second partition of the removable nonvolatile memory
5 device, the method comprising the steps of:

6 outputting a message to a user alerting the user that the computer booted from a
7 last known good kernel;

8 adjusting a set of boot variables so that the computer will boot from the second
9 partition;

10 copying a stored copy of the upgrade kernel to the first partition; and

11 adjusting the set of boot variables so that the computer will boot from the first
12 partition.

1 22. The method of claim 19 further comprising the step of :
2 verifying the copy of the upgrade kernel to the first partition before adjusting the
3 set of boot variables so that the computer will boot from the first partition.